BatLab Basic Project Kit – Push Button

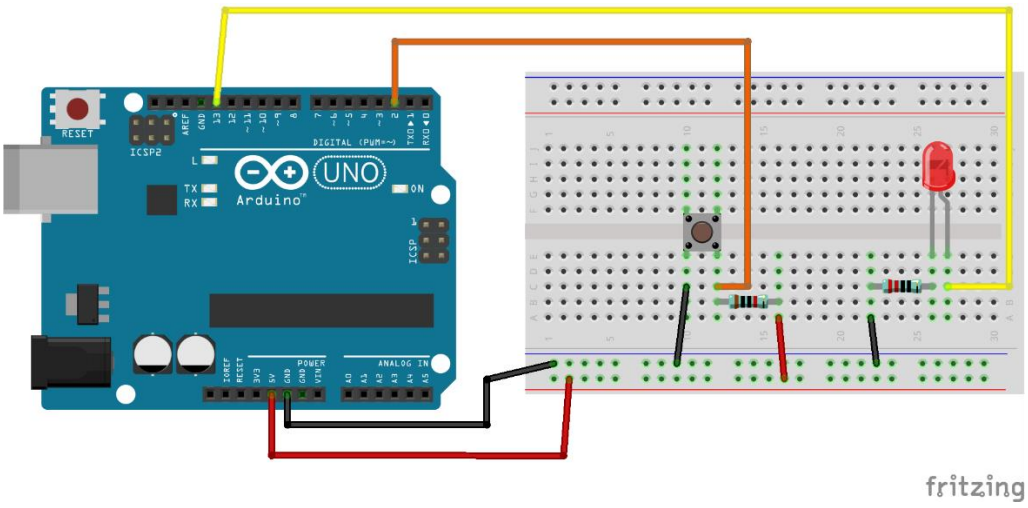
HOW IT WORKS

Push buttons are one of the basic ways to get user input into the Arduino. In this circuit the button is connected to a digital input on the Arduino, and an LED is connected to a digital output (the input and output states are set in the code). The digital input will have a LOW value when the button is pressed, and a HIGH value when it is not pressed. Read the comments in the code for more details.

PARTS

- Arduino Uno
- Push Button
- LED
- 220Ω Resistor (marked with red band for convenience)
- 10kΩ Resistor (marked with silver band for convenience)
- Breadboard & jumper wires

CIRCUIT



```
/*
Push Button Example

Push buttons are a basic method of getting input from the user of a
circuit. The value returned to the digital input pin on the Arduino is
either a LOW or HIGH voltage value (ON or OFF).

When the button is pressed it completes the circuit between the two button
pins used in this circuit. One pin is connected to ground (GND), and the
other is connected to a digital input on the Arduino (#2 in this case),
and to a 10k OHM "pullup" resistor connected to 5v.

When the button is pressed (closed) the digital input receives a LOW
voltage state, because the circuit connects to ground through the button,
causing a voltage drop. When the button is not pressed (open) the "pullup"
resistor allows a tiny voltage to trickle from the 5v connection, thus the
digital input reads HIGH.

Note that we are using the Arduino as an intermediary between the button
and the LED. All interaction between the two is determined by our program.

Since we use the Arduino digital pin numbers several times in our program
we will store those values as variables. If we wish to change the pin we
are using, we will only need to change the value in one place. If we do
not use variables we would have to change the value in multiple locations,
potentially causing havok in our program if we miss one. We use a 'const'
because the value will not change while the program is running.
*/

const int buttonPin = 2;  // pushbutton 1 pin
const int ledPin =  13;    // LED pin

void setup()
{
  // Set the pushbutton pin as an input:
  pinMode(buttonPin, INPUT);

  // Set the LED pin as an output:
  pinMode(ledPin, OUTPUT);
}

void loop()
{
  int buttonState;  // variable that stores the state of the button
  buttonState = digitalRead(buttonPin);
  if (buttonState == LOW)  // if the button is being pushed
  {
    digitalWrite(ledPin, HIGH);  // turn the LED on
  }
  else
  {
    digitalWrite(ledPin, LOW);  // turn the LED off
  }
}
```